

February 1951

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

SOIL CONSERVATION •

CHARLES F. BRANNAN

SECRETARY OF AGRICULTURE

HUGH H. BENNETT

CHIEF, SOIL CONSERVATION SERVICE

ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

FEBRUARY — 1951

VOL. XVI — NO. 7

☆ THIS MONTH ☆

	Page
FARMING IN THE LAND OF THE MIDNIGHT SUN By J. H. Christ	147
A DAY AT RED HILL PLANTATION By N. B. Pfeiffer	150
WATER IN THE GROUND: TOO MUCH OR TOO LITTLE By Hugh Bennett	153
FARLEY OF ARKANSAS—A Profile By A. J. Troxell	158
BETTER IRRIGATION AT LOWER COST By A. J. Webber	159
DONALD PHARIS OF MISSOURI—A Profile By W. H. Lathrop	160
PARTNERS WITH NATURE—A Review By Phoebe O'N. Faris	162
OUR DAILY BREAD—A Review By Cal L. Roark	163
NOTES FROM THE DISTRICTS	164

WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

10 CENTS PER COPY

\$1 PER YEAR

FOREIGN—\$1.50 PER YEAR

25 percent discount on orders of 100 or more subscriptions
mailed to a single address

BOOK MATCHES ISSUED.—The Northern Neck (Va.) Soil Conservation District, assisted by the Soil Conservation Service, is attempting to extend and work with more farmers in soil and water conservation. "Even though this district has been operating for 10 years, many of our people have not been sufficiently informed as to the services available in helping to combat losses of soil and water," writes James Latane, chairman of the board of supervisors.



"The little farmer, the marginal farmer, the beginner farmer, and farmers who do not receive current publications are among the ones we feel need to know more about what assistance is located within their county and how they may obtain such assistance in the way of a complete soil- and water-conservation plan.

"We felt that book matches with pertinent district information, well distributed to the country stores, service stations, and other gathering places, to be given to their customers along with purchases, would be informative, stimulate interest, and result in more requests from individuals and groups of farmers not previously worked with."

FRONT COVER.—Gladioli on contour on the loamy sand of the Elmer Gandy farm, Cumberland County, N. J. The site classifies as II and III land; the slope is 4 percent. Portable irrigation is used here. The farm is in the South Jersey Soil Conservation District. Harry R. Slayback is the photographer.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

FARMING IN THE LAND OF THE MIDNIGHT SUN

By J. H. CHRIST



ON a 1914 soil reconnaissance of the Cook Inlet-Susitna region of Alaska, strapping Hugh H. Bennett found a million and a quarter acres of bench and plainlike country "quite favorable to farming."

"About one-half of this good land occurs in the Susitna and Matanuska Valleys," Bennett and Thomas D. Rice, his fellow soil surveyor, wrote in their report of their summer's rugged work.

"The good agricultural lands—the benches, hillocks, and ridges—are largely occupied by the Knik soils, which have well-established drainage," the men wrote.

In making the reconnaissance of some 40 million acres in the 1914 and 1916 summers Bennett's parties used pack horses, rowboats, power boats, automobiles, river steamers, and the Copper River and Northwestern and the White Pass and Yukon Railroads.

Agricultural development of Alaska has centered in the area which Bennett and Rice delineated, particularly in the Matanuska Valley, which has had widespread mention.

NOTE.—The author is director, Pacific Region, Soil Conservation Service, Portland, Oreg.

Bennett then held the title of inspector in the old Bureau of Soils. Bennett today, 36 years later, is chief of the Soil Conservation Service, which is following up his 1914 and 1916 work in Alaska with more refined soil conservation surveys of promising portions of the Territory.

The Soil Conservation Service now has detailed conservation survey information on approximately 1 million acres of land in Alaska. Of this, 200,000 acres are represented in areas of the Public Domain withdrawn from settlement by order of the President of the United States until their value for agricultural use can be determined.

It was on Bennett's findings that subsequent detailed studies under the leadership of William A. Rockie were started in 1939. Rockie's conservation surveys provided inventory for the land surrounding Palmer, Matanuska, and Wasilla. The war years intervened, and work was resumed at Dunbar in the Tanana River Basin and at Kenai on the Kenai Peninsula in 1948. The year following, 1949, other potentially important areas were studied on the Kenai Peninsula, and surveys were completed at Kenai-Kasilof, Ninilchik, and Homer-Fritz Creek, the Department of Interior having



Class IV land near Fairbanks, properly protected when put in pasture.

withdrawn these lands from settlement for such a survey. The past season, 1950, has still further increased the coverage of detailed land information at Fairbanks, Homer, Anchorage, Chugiak and preliminary material at Salcha-Big Delta.

Although a farming of sorts has been going on in Alaska for more than a century, it was not until 1935 that there was a major influx of settlers. This was the Matanuska Colony undertaken through the medium of the Alaska Rural Rehabilitation Corporation. Started as a relief measure during the depression years of the thirties, the produce of these farms and others in the Territory provided materially to the armed forces stationed in Alaska in World War II. It showed conclusively, too, that there was an agricultural future for this great land, and that sound agricultural settlement was needed to provide local products to the key military establishments that provide a protective facet for the North American mainland.

There is no doubt that many believe strongly in Alaska's agricultural future. Following the war many veterans exercised their GI privileges in taking up homesteads in locations of their choice. Even at this date filings for land are recorded at a rate of 60 to 70 a month during the months that the lands can be examined.

It is to help these settlers that accurate information is being secured. Critics have often declaimed the policy of our Government in permitting settlement of land poorly suited to farming. However, without facts pointing up the character of the land and its potentialities and its limitations, little else could have been expected. But now on this new frontier we do have the facts, and they are available to settlers wishing to have a reliable guide for their investment and effort.

The Alaska Soil Conservation District law, enacted in 1947, declared the entire Territory of 586,000 square miles a soil conservation district. In the Subdistricts formed at Palmer, Wasilla, Chugiak, Anchorage, Homer, Fairbanks, and Salcha-Big Delta, land-capability information is now available at the offices of these units of Territorial Government.

There is good land in Alaska. The proof of this is shown on the farms in many localities. Yields are good and quality is high. But not all the favorable-appearing land is good, nor can it be farmed indifferently. Wind and water erosion can be just as damaging in Alaska as it is on State-side lands.

Deteriorating yields through reduction of fertility can come about even more rapidly because Alaska's lands are not inherently high in fertility. Of the area mapped, about 20 percent falls in Classes II and III, those primarily adapted to cultivated crops; 20 percent in Class IV, which has best use in meadow and pasture; and the balance in Classes V, VI, and VII, which may be used for range or timber production; or Class VIII, which, because of steepness, rocky character, or climate, has no agricultural value.

An observer from outside will quickly note the shallow silt profile that overlies the gravels of the Kenai Peninsula, the Matanuska and Susitna Valleys, and the Delta Valley of the middle Tanana region. Again, he will marvel at the depth of the silt deposits in the Fairbanks section. And, interspersed with these, he will note the extensive areas of muskeg. The boggy, poorly drained areas are present in all localities.

Yes, you're going to use a new set of standards to interpret the things you see. Anyone striking out blindly has every chance of loading up on a heartache. Even on the best lands it's no bed of roses. As a GI homesteader put it to me, "This easy-money idea is a laugh—making anything out of a homestead is the hardest money I ever earned." Then he added, "But we like it. We're running our own outfit, it's a good place to live and a good place to bring up kids."

Another thing to learn is that farm crops are limited to a narrow elevational range and that they are greatly affected by the direction of slope. Rather arbitrarily, the uppermost limit is in the vicinity of the 1,000-foot contour. Favorable air currents raise it in some sections, lower it in others. Then, too, it drops off as one goes farther north. Remember, also, that the sun's rays hit these lands at a low angle. For that reason north slopes are extremely slow to warm up, and frozen ground can be found almost on the surface throughout the summer in the interior.

Root crops and leafy vegetables give excellent yields under good management. The bounty of these crops leads the settler to rely on them for his early cash income. After all, it's about the only move that can be made on the small acreage initially cleared to put hard money in the pockets of the settler. But it's highly competitive, for just as the newcomer sees an early return from his land in these crops so also does the farmer who has a



The glamour of glacier and snowcapped peaks across Cook Inlet is somewhat lost on busy soil scientist.

greater acreage of cleared land, and who also has learned how to grade and package his produce, and who has also established a firm market outlet for his crops. After all, there is a limit to the consumption of cabbage, rutabagas, beets, potatoes, lettuce, chard, and the like.

The farsighted farmers are taking a realistic attitude toward their future. They see the ease with which the cash-crop market can be broken, and they see the same erosion pattern starting that earmarks much of the one-crop farming in the States. Naturally, their ideas shape up in a permanent cropping system that includes livestock as its core. There are winter hardy grasses and legumes adapted to Alaskan conditions. Sure, there are severe years when there are heavy winter losses, but don't we find the same conditions prevailing at times in our northern tier of States? We likewise find winter losses the heaviest when the stands are weakened by heavy grazing or run down by poor fertility-maintenance practices. So, necessarily, good management is just as essential to good farming in this Land of the Midnight Sun as it is elsewhere.

The settler needs to learn how to take care of forage under the conditions of summer rainfall, less so in the Central Tanana sector than down toward Palmer and Kenai. Maybe he will be

willing to sacrifice somewhat on yield to gather in an early crop when the good weather prevails, or he may have a silo and silage-producing equipment so that the feed reserve can be preserved in the more inclement weather. Or he may field-cure his hay by the more laborious process of shocking it on standards, a sight frequently pictured in rural Scandinavian scenes. Strangely, hay so stacked continues to cure and provides a feed high in quality.

Over the years, the plant breeders of Alaska and of foreign countries in the same latitude have developed varieties of barley, wheat, and oats that give pretty reliable returns, thus cutting down on an expensive feed bill for the shipped-in concentrates. Varieties suited to the use of a combine have yet to be isolated, so the binder and field shocking are standard practice. The crop at times may be threshed from the field, or it may be stacked and threshed after the weather settles into the colder months.

With farming shaped up about a livestock economy, certain benefits are apparent. An easily flooded vegetable market is avoided, and the elements of good land husbandry are on top. The same processes that formed these soils are ever present to tear them down. Winds of high velocity whip up the glacial flour from the annual deposits along the bars of the streams. None of the land so built has a great enough depth to warrant having it exposed by ill-considered farming methods. A good winter cover is essential, and a rotation that includes long-lived grasses and legumes builds up the organic matter, and with it the fertility. Wind-breaks of native timber, spaced at appropriate intervals, both as the farm is being developed and later to furnish protection to the intervening cultivated strips and a future fuel and lumber supply, seem to have an important place in the farming scheme.

On the sloping lands and deeper soils laid down as water or loessial deposits the water-erosion hazards are high. These immature soils have high erosion tendencies. They cut quickly and deeply as runoff water concentrates on them. Here contour farming can be used effectively, and experience may show that terracing or diversion channels, coupled with crop rotations, have an important place. Sheet erosion is present, too, and rain on the thawing soil in the spring can flush a layer of

(Continued on page 152)

A DAY AT RED HILL PLANTATION

By N. B. PFEIFFER

NEIGHBORS for miles around assembled in the foggy dawn of October 18 to help the Reverend Ralph Bellwood apply a soil-saving sermon to the lands of the Red Hill plantation in Virginia. There were some 10,000 of them present.

The event was notable for two reasons. First, Red Hill was the plantation where Patrick Henry, American patriot and conservationist, farmed during his declining years. Second, the Patrick Henry Foundation had given the Reverend Mr. Bellwood use of the estate as a home for "problem" boys.

Patrick Henry is generally remembered for his speech at the second "revolutionary" convention called in Virginia, urging the colony to arm her militia. He is also remembered as having said in 1790, "He is the greatest patriot who stops the most gullies." Not so well in mind, however, is the fact that Patrick Henry himself was something of a problem as a boy, before he rose to fame.

Mr. Bellwood, who had done considerable work with young people in his ministerial charges in Southside, Va., had also observed the beneficial

NOTE.—The author is soil scientist, Soil Conservation Service, Chase City, Va.



Regional Director Buie said the day's happenings appropriately reflected Patrick Henry's interest in conservation and democratic action.



Lynn Shelton, editor of the *Halifax Gazette*, and T. S. Buie being impressed by almost priceless boxwood at Red Hill plantation.



Part of the 10,000 who watched transformation of plantation.

results of soil conservation district work in his travels throughout the Commonwealth. So when the foundation granted him the use of the land for his project, he decided to see what could be done to rehabilitate both problem boys and problem land. For in spite of Patrick Henry's noble sentiment, galls and gullies had multiplied alarmingly since the patriot's death in 1799.

Red Hill plantation lies in both Charlotte and Campbell Counties, in the Southside and the Robert E. Lee Soil Conservation Districts. When Mr. Bellwood called on the supervisors of the two districts, they readily agreed to sponsor the land-conservation portion of the program. The Soil Conservation Service, the Virginia Forest Service, the Commission of Game and Inland Fisheries, the State Department of Vocation Education, and the Virginia Agricultural Extension Service assisted the supervisors in technical aspects of the work.

The Soil Conservation Service, in cooperation with Mr. Bellwood and assisted by collaborating agencies, prepared a complete farm plan, based on the capabilities of the land. Nearly all of the 1,000 acres now included in the plantation had been in cultivation at one time or another. Tobacco, corn, and other crops have been grown there for two centuries. Old crop rows can still be seen under

the cover of "spruce pine" on many acres. The once-fertile bottom lands along the Staunton River, no longer suitable for corn, can be used only for pasture. They remain wet for long periods and are flooded frequently because of the silted stream channel.

Nearly all of the material and equipment used in the rehabilitation program was donated by local dealers. A 70-year-old Negro, who owns an adjoining farm, cut nearly 700 fence posts. By daylight, a small army of volunteer workers, operating 50 tractors and 3 bulldozers, was in the field filling gullies, disking, liming, fertilizing, and seeding. Some 350 veterans, both white and Negro, helped do the work as part of their training.

The road leading to the farm was repaired, banks were sloped, and drainage ditches were opened by the State Highway Department. Home demonstration clubs, church and civic organizations sold lunches to the spectators and furnished free lunch for the veterans. Boy Scouts helped highway patrolmen direct traffic.

S. A. Ozlin, chairman of the Southside district's board of supervisors, presided.

T. S. Buie, Southeastern regional director of the Soil Conservation Service, reminded the gathering that it was Patrick Henry, fiery orator of liberty,



Albert Pannell, 102-year-old former slave, marveled at the "miracle."

who preached and practiced the gospel of stopping gullies.

William Tuck, former Governor of Virginia, declared, "It is especially encouraging to see the restoration of the Patrick Henry plantation because it is symbolic of the character rebuilding which is to follow. I congratulate the Patrick Henry Foundation, which is making this historic spot available for the rehabilitation of problem boys."

It was during Governor Tuck's administration that the Virginia General Assembly appropriated more than \$50,000 for the restoration of the estate. James S. Easley, of Halifax, Va., president of the foundation, reports that the foundation has now paid the last debt on Red Hill.

Mr. Bellwood said that soil conservation would be a major part of the training the boys will receive at "Patrick Henry Boys Plantation."

Among the guests were Albert Pannell, 102-year-old former slave, who still makes his home on a part of the original plantation, and George Britton, a descendant of the Henry slaves, who stood by the grave during the day and expounded on the virtues of the old master of Red Hill.

Representatives of seven radio stations and as

many newspapers handled reports of the day, and motion pictures of the event were made. Editor Lynn Shelton, of the *Halifax Gazette*, handled advance releases through the newspapers and radio stations of the area.



Former Governor Tuck commends use of plantation as rehabilitation home for problem boys.

LAND OF MIDNIGHT SUN

(Continued from page 149)

the most productive soil from the slopes and re-deposit it on the bottom lands.

The prospective settler today may well think over the 1914 suggestion of Bennett and Rice. "Before going to Alaska it would be strongly advisable for the prospective immigrant to make a careful study of the geography of the region, its climate, soils, crops, transportation facilities, market conditions, and population; and sufficient capital should be available to carry the new farmer through a period of one or more years during which he will be busy clearing land and constructing necessary buildings."

So, wherever you go you find that good judgment needs to be the companion of good farming. There's no more reason for laxity in developing a farm in Alaska than there is in the States. There are people there who realize this, and their counsel can be used to excellent advantage by the farmer who is caught irresistibly by the wonders and drawing power of the Northland.

WATER IN THE GROUND: TOO MUCH OR TOO LITTLE

By HUGH BENNETT

MORE and more I am struck by the important part which water plays in our national economy. Too much here, too little there, across the seasons can help or hurt the land, the crops, and the users of water. Nearly everything depends on how water is used or managed.

All in all, for decades, water has seldom, if ever, been in exactly the right amount, at the right place and the right time.

Some of this unbalance can be corrected. Farmers and ranchers are beginning to get acquainted with water management in the nearly 2,300 soil conservation districts over the Nation. We are finding, too, that we have not yet learned all we need to know about either erosion control or water management. True, this necessitates some delay

at certain points; but that doesn't stop progress. We are moving with the field job wherever we have adequate information—and, through research and experience, we now have a great deal of basic and practical information to enable us to move ahead.

During the past few years, as in the 1930's, we have experienced the opposite extremes of severe shortages and severe excesses of water. Serious droughts have occurred in New England and the Southwest, and locally across the central part of the country. During the same period there have been some of the worst floods in history along the Columbia, the Ohio, and other rivers. The floods not only have destroyed many thousands of acres of crops but have ruined for further immediate cultivation thousands of acres of highly productive land.



Hugh Bennett casts an appraising eye on an oatfield near Monte Vista, which illustrates need for water-table management. Elsewhere in this area the oats were waist-high and calculated to induce a more pleased reaction.

As a result of the drama of flood and drought, laymen and professional people alike have become increasingly aware of the importance of water in our national life. When we consider the tremendous effects of shortages and excesses on our productive capacity, our health, our well-being, and our national economy, the water and land problem builds up to staggering importance. I doubt if there's any other problem, with the single exception of war itself, that bears so heavily on the entire population.

And so, I keep on journeying about the country for the purpose of keeping abreast of our rapidly advancing soil and water conservation program.

Early last fall I met with some of our leaders in the Soil Conservation Service at the colorful old Indian-Spanish-American town of Taos, N. Mex.—once an important agricultural area of the early Spanish occupation of the Southwest. The subject of water had top billing on our agenda. We labored for several days hewing out a more fully developed and, I hope, sturdy set of guiding principles. We agreed that the Soil Conservation Service must do everything possible within available resources to provide help and guidance to landowners and water users who are confronted with new and complex water problems related to the land.

Some of us, quite naturally, browsed around in the evenings to enjoy the famous old town and countryside with its picturesque Indian and Spanish-American people living much as they did 300 years ago. We examined and purchased some of the wares of the local art colony, which has taken up living the simple country life of the *rancheros* while capturing some of its beauty and interest on canvas, especially the beautiful mountain scenery, autumn coloring, and native characteristics.

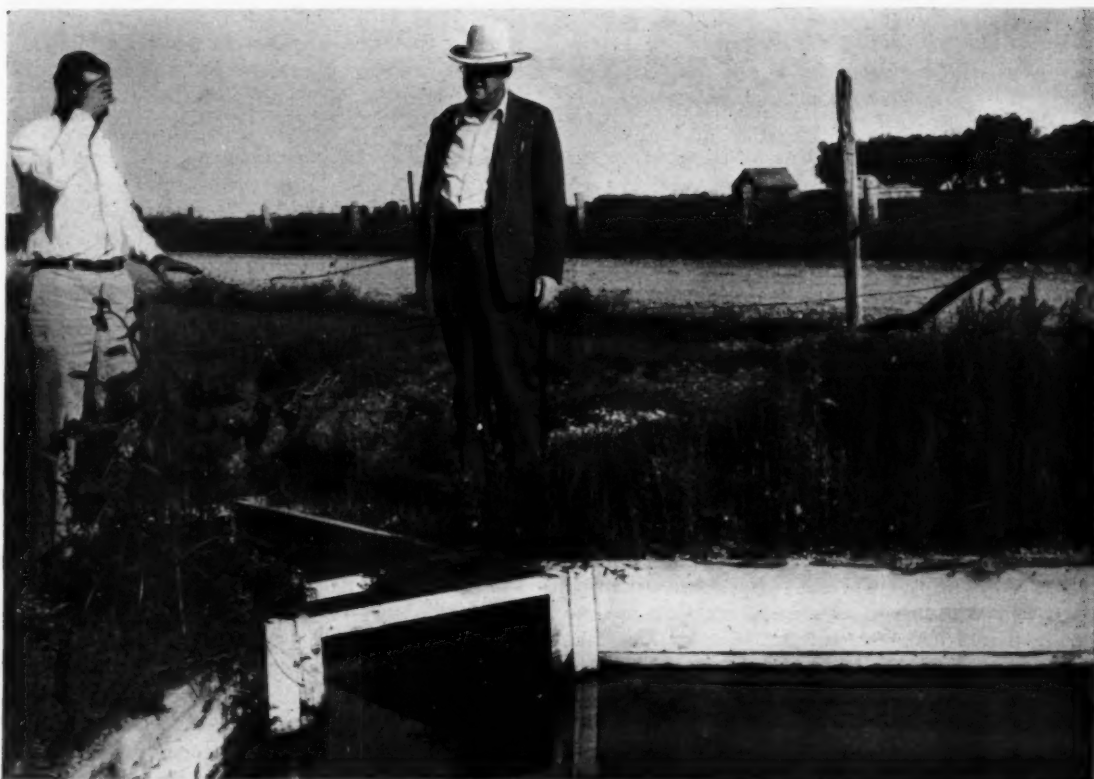
After our deliberations, I took the opportunity to get into the field to see first-hand how we are getting along with conservation operations. We traveled north to one of the most unusual agricultural areas on the North American continent—the mile-and-a-half-high San Luis Valley of Colorado about the headwaters of the Rio Grande. This area, as big as the State of Connecticut, nestles between the lofty Sangre de Cristo Mountains on the east and the San Juan Mountains of the Continental Divide on the west. From the snow-captured waters of these mountains flows the life blood of the Rio Grande Valley—water for irrigation and other uses.

High mountains surround the valley on all sides, save the low lava-capped hills near the State line. According to Weather Bureau records, the valley floor receives an average of only about 7 inches of precipitation, but the higher mountains get up to 40 inches a year, much of which comes in the form of snow. Melting snow provides most of the stream flow from April to July, on which irrigation agriculture, industry, and municipalities are dependent for hundreds of miles to the south.

The river and other mountain streams have carried sand, gravel, and clay into the valley for undetermined centuries—to the point where a closed basin has been built up by impervious geological substrata lying to the north and east of the Rio Grande. These deposits have blocked the exit of many small streams. Some water enters the closed basin from the Rio Grande to the west, where it comes out of the high canyon country near Del Norte, percolating into and through the coarse gravel substrata. Beyond this point, there is probably little or no outlet of surface and ground water to the Rio Grande, except that provided by the artificial drainage systems. The trapped waters of the closed basin form a huge underground reservoir. Some of the waters are also confined between impervious substrata, producing two distinct layers of artesian waters, one of which is said to be pure enough for use in batteries. However, the shallow ground water moving in the coarse gravel lying immediately below the soil mantle is the principal source of water for subirrigation.

Water for irrigation purposes has been imported into the closed basin by diversion from the Rio Grande since shortly after the Civil War. In addition, subirrigation has been practiced by “checking” drainage ditches so as to build up the water table sufficiently to meet the high water requirements of the relatively open, porous soils, especially on the west side of the valley. This, without sufficient natural or artificial return drainage to the river, has resulted in the local accumulation in the soil of large quantities of alkali salts, with consequent reduction in crop yields, a break-down in the soil structure, and the abandonment of some thousands of acres of valuable farm lands.

As we entered the irrigated area, I began to ask questions of Joe Sexton, our local Soil Conservation Service representative working with the soil conservation district supervisors and cooperating farmers in the valley. “What about crop yields?”



Open drain in Rio Grande Drainage District. Irrigation farmers, the Rio Grande Soil Conservation District, the Soil Conservation Service, and the local drainage district all work together on the program of improved water-table management.

I inquired. "Have they declined in some localities and increased in others?"

Joe replied that the yields were materially lower in areas where slope, soil structure, water table, and alkali conditions constitute a serious problem and conservation measures have not been applied as yet. But in other areas where these conditions have been corrected, the farmers are getting substantially better yields of good quality crops. He indicated, however, that there is a feeling among the technicians and farmers alike that permanent improvement in crop yields will require the development of a district-wide conservation drainage program, particularly in the Rio Grande Drainage District. If successful in this area, such a program might be extended to other portions of the valley. He pointed out that in some spots where salt accumulation is particularly high, potatoes will not make a crop at all.

The Rio Grande Drainage District has operated its drainage system successfully since 1916 and

until very recently has kept one of the most productive parts of the valley relatively free from excessive salt accumulation and high-water-table conditions. Because of its past success, the drainage system of the district will now be improved and extended by major maintenance and by replacement of structures which have deteriorated with age. The use of too much water and the lack of coordination in its use between farmers has caused much of the drainage problem.

I asked how many acres were affected with alkali in the Rio Grande Drainage District. Joe Sexton replied that a recent survey lists some 800 acres as severely affected, 10,000 acres moderately affected, and the remaining 22,200 acres slightly affected. In other words, the entire drainage district is affected to some extent, while in some localities, such as the southeast corner of the district, conditions have become quite serious.

We examined some of the fields to see first-hand the difference in crops. Oats in one field were only

about 10 inches high. The soil seemed to be more compact and the surface of the ground rather uneven, although not rough by any means. In some spots the water table was at or nearly at the surface of the ground. Light-colored spots indicated the presence of alkali in substantial quantities.

Not far away we examined another field that was being managed according to conservation plans, in which the oats were waist high. This was smooth and even. No water stood on the surface; the soil was in good state of drainage, and there was no evidence of alkali. Soil structure was favorable—without compactness. The stand of oats was quite uniform in height and density over the entire field.

These examples were enough evidence to cause me to believe that the soil conservation district officials and cooperating farmers had been able to make real progress in solving some rather difficult conservation problems, even though they seemed to feel that something further must be done over and above the work established at the time. The situation appeared to call for closer examination and study than I had been able to make at that stage in order to understand what lay back of the differences in productive capacity and what might be done about it.

The next area visited was a field where land-leveling operations had been carried out, following careful surveys by engineering and soil technicians. The surface of the soil appeared to be as flat as a table, although there was a very gentle slope in one direction. This, I was told, makes it possible to obtain uniform penetration of surface water during irrigation, preventing ponding and consequent uneven growth of crops. And this is what I would consider rather precise conservation farming, with emphasis on good water management.

Joe Sexton indicated that land leveling is one of the best ways to get better and more uniform yields. It also establishes an accurate base by which the water table can be controlled for sub-irrigation in the valley.

Subirrigation? That was something rather out of the ordinary for much of the West, it struck me. I had seen it in the Sanford, Fla., celery district where a compact sublayer served to control the water level, operating in conjunction with tiles which served the dual purpose of draining the land in wet weather and supplying needed water by subirrigation in dry spells. (See Circular 21, Bureau of Soils, U. S. Department of Agriculture, 1910.) Also, I had seen subirrigation by

water-level control with ditch gates in the drainage work of the Service in eastern South Carolina and in other parts of Florida.

Subirrigation apparently is not too widely practiced in the West because it requires a combination of soil and water conditions not usually present. "What about this practice of subirrigation?" I inquired. "Why is it so important in the San Luis Valley?"

Joe then took us to see some of the covered drains which were established, beginning back about 1916, when alkali began to give trouble. He explained how the drains were "checked" by movable gates to build up the water table during the growing season and to lower it again after the growing season when some of the excess water is carried away. Some of the drains had deteriorated and some of the checks seemed to be rather high.

When I asked why the practice was so peculiar to the San Luis Valley, the technicians indicated that the coarse, porous soils of the valley require unusually large amounts of water and this is available in the gravelly substrata which carries shallow ground-water seepage from the river and from irrigation canals within the closed basin. Where the soil or substrata is not sufficiently porous or drainage checks are not properly spaced and managed, however, the water table builds up to or very near the surface, causing damage to crops.

This seemed to explain why the San Luis Valley is so unique—the coarse, porous soil over most of the area; the high water table built up by years of seepage from streams and irrigation diversions and subirrigation; the presence of impervious substrata which prevent the natural escape of water to the Rio Grande and cause artesian conditions; the short growing season; and the ever-accumulating alkali. The only practical way to give this porous, gravel soil enough water to meet the needs of crops is to hold up the movement of ground water in the gravelly substrata by the use of mechanical "checks."

Gullies, floods, and soil washed down from eroded hills are obvious in their costly meaning and have become even more so in recent years because of the spread of soil conservation over the Nation; but here in the San Luis Valley land-damage conditions are much less evident to the eye. Here is a type of land damage going on apace because of too much or too little water in the ground and too much salt. But the effect is much the same as where erosion damage is so conspicuous—some



Proper leveling of farm land in San Luis Valley is particularly important because most of the irrigation is achieved by management of water table. SCS plans and specifications help provide uniform crop because all plant roots reach down to same depth. This typical scene is about 5 miles northwest of Monte Vista, Colo.

acreage is ruined for practical farming, much land is moderately affected in productive capacity, and all the remainder is slightly affected. All because the farmers and their local representatives have not as yet found ways and means to make full adjustment of their land- and water-use practices to the environmental limitations.

But farmers in the valley have made real progress in the last few years toward correcting some of the soil- and water-conservation problems such as: subsoiling to open up "tight" alkaline soils and subsoils and to aid in leaching out excess salts from these spots; maintaining grain stubble and, in some areas, irrigated pastures to aid in the control of wind erosion and the drift of loose soil into drainage ditches; land leveling and improvement of soil structures for better surface control of irrigation water and to provide a more precise base for manipulating the water table for effective subirrigation.

Land leveling has been practiced in this valley for many years because satisfactory growth of crops under subirrigation requires a rather even land surface in relation to the top of the shallow water table. In recent years land leveling has been increasing in the valley both as to extent and degree of accuracy. This has been made possible by the use of modern heavy equipment provided by farmers and equipment contractors and of precise measurements provided by conservation engineers and soils technicians.

All of these things are directed specifically at the water aspects of soil conservation problems and are part and parcel of well-rounded farm conservation plans worked out jointly by the landowners and water users and their locally organized and locally managed soil conservation districts, with the aid of Soil Conservation Service technicians.

This seemed to be the time for some more questions. And so I asked our conservation technicians again, "What about those problems which farmers and technicians alike feel must be tackled on a district-wide scale?"

Joe Sexton smiled and handed me a thick report prepared by Soil Conservation Service technicians, with the help of information provided by other agencies having basic water information. The report was based on careful surveys and investigations of soil, topography, geology, water, and the cropping condition and needs of the Rio Grande Drainage District. This drainage district covers the northeast quarter of the Rio Grande Soil Conservation District, almost in the center of the San Luis Valley.

But there is not sufficient space to give the details here. We shall have to look at the report itself.

VIEWED FROM HIGHEST GALLERY.—More than 200 Caldwell County, Tex., farmers recently took a look at their land from the air. Louis Bromfield, author and farmer, spoke on erosion control and soil improvement as part of the aerial conservation program. Walter W. Cardwell, manager of the Luling Foundation farm, was general chairman.

DISTRICT PROFILE

FARLEY of ARKANSAS

R. H. Farley is the grand old man of soil conservation in Arkansas. The thousand cooperators of the Greene County-Crowley Ridge Soil Conservation District revere him.

At 77, "Uncle Henry" has the double distinction of being the oldest supervisor—both in age and length of service—in the oldest soil conservation district in the State, which is among the oldest in the Nation. His appointment, dated November 19, 1937, preceded issuance of the district's certificate of organization, issued on December 7 of that year under the first soil conservation districts law enacted in the United States.

Farley's 13 years of continuous service as a supervisor is a record. The only member of the original board of supervisors still serving, he has seen the district grow from a small ridge area to cover all of Greene County.

Farley's part in Greene County agriculture began soon after his arrival in 1889. In 1896, the year of his marriage, he started farming for himself, buying 40 acres at Paragould, his home community. A few years later, he added an adjoining 40 which he cleared of timber. Over a period of years other purchases brought his land to 207 acres. When he retired in 1946 and turned operations over to his sons, he had completed a full half-century of conservation farming.

Even before the time of an organized soil conservation movement, Farley saw that something must be done or else the soils would be depleted to where farmers could not produce profitably. A conservationist at heart, he pioneered use of conservation practices in the county. He introduced the level to neighboring farmers and helped them to lay out some of their first terraces. Although those early devices were not up to present-day specifications, Farley feels they served their purpose.

"Without contour tillage or terracing, most of the steep lands on the ridge gullied and washed away in 3 to 5 years after clearing," he points out.

Ardent advocate of conservation, Farley practiced what he preached. Under the soil conserva-

tion district program, he installed a well-rounded conservation system. It included soil-improving crops, contour cultivation, crop rotations, terraces, waterways, strip cropping, gully treatment, seeding and sodding of pastures, stock ponds, woodland improvement, and fire protection. Though much of his land was practically worn out when he acquired it, conservation farming has doubled production.

Farley said that when he began farming, crops were limited to cotton, corn, some hay, and a little wheat, which farmers grew to make flour for home use.

Until after the turn of the century, there was open range for livestock in Greene County. All the cows and hogs that ran on the range were earmarked for identification. Farley recalls his brand: a crop and underbit in the left ear and a split and underbit in the right ear.

He remembers selling lint cotton for 3½ cents a pound, dressed hogs at the pole for 3½ cents, and a load of hogs on foot for as low as 2 cents. As an old-timer who questions the good of the "good old days," Uncle Henry says that to appreciate properly today's standard of living one needs only to have lived back in the time of low prices when there was "little to sell and even less to buy with." Farley prefers present figures to 3½-cent cotton and 2-cent hogs. He also prefers proved conservation practices to the hit-or-miss measures of old.

—A. J. TROXELL.

A CROP FOR THE LORD.—They are all conservation farms in the Round Grove neighborhood near De Leon, Tex. That's the secret behind the kind of church you'll find there.

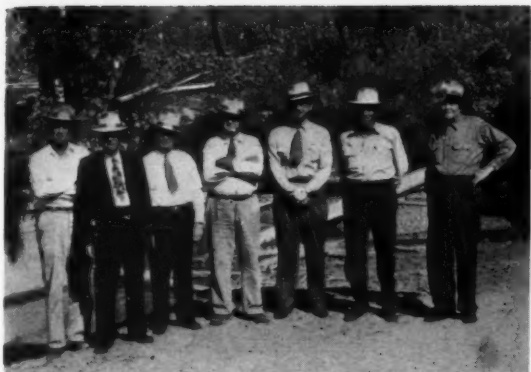
The church building is made of rock and is centered in a protective grove of oak trees. It makes a pretty picture, to match the good conservation farms roundabout.

Round Grove Missionary Baptist Church was founded in 1871 by Ruben Ross. His great-great-grandson, Murray Kay, following in his footsteps, is both pastor and farmer, with his roots deep in community life.

Some time ago the congregation decided a new church building was needed. There wasn't enough money, so the church folks decided to rent 20 acres of peanut land and "raise a crop for the Lord." They donated money for fertilizer and seed. The men harvested the crop and all profits went into the building fund.

The effort paid well. At first the church had services only once a month. Now there's church every Sunday, and the congregation is busy saving up another building fund to add Sunday-school rooms.

—JOHN O. SIMPSON.



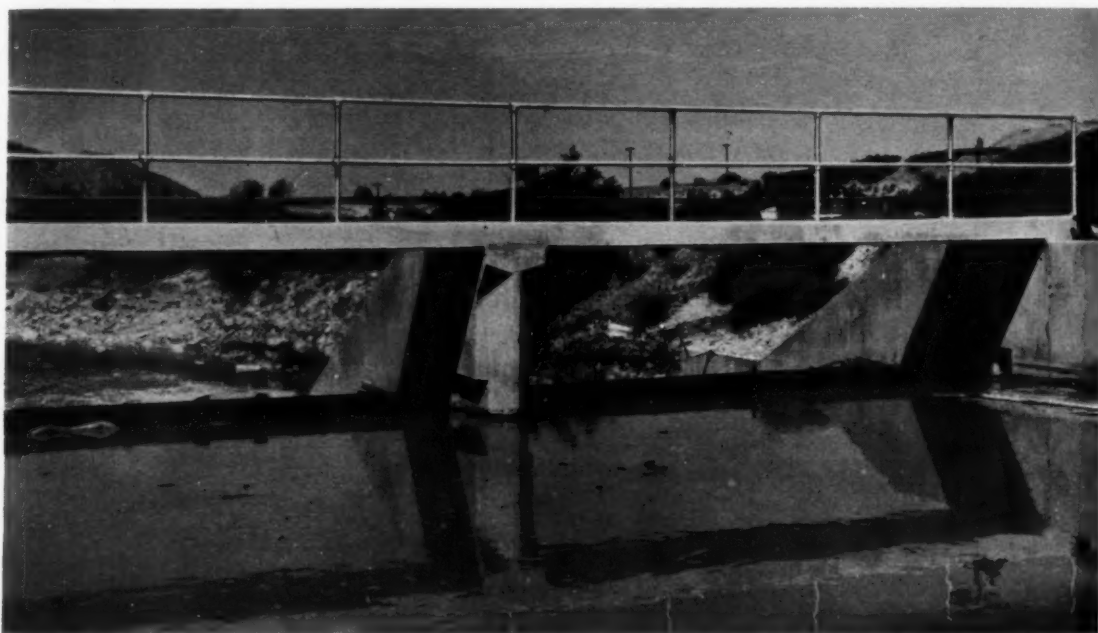
Board of Directors, East Bench Canal Co.: Ray Williams, President Joe Hansen, R. L. Jex, Secretary-Treasurer William C. Beckstrom, Reuben Gardner, Water-master George W. Jex, and Gil Bearnson.

Better Irrigation At Lower Cost

By A. J. WEBBER

the canals were constantly filling with sand and gravel; maintenance costs were high.

"Each spring, water users kept their fingers crossed, hoping that a high flow would not take out the structure, leaving them without water for their summer crops," says Joe Hansen, president of the company. "And every spring farmers asked the board what it was doing to alleviate the problem."



New concrete diversion structure built by the East Bench Canal Co. at Spanish Fork, Utah. It crosses the Spanish Fork River in the Nebo Soil Conservation District.

FOR 25 years stockholders of the East Bench Canal Co. at Spanish Fork, Utah, pondered a problem. The condition of their diversion dam on the Spanish Fork River was becoming more precarious every year. The apron of the structure was being undercut; the timbers were old and rotting. Since sluicing operations were a thing of the past,

Actually, there wasn't much that could be done except to build a new diversion dam with sluicing facilities.

Reconstruction of the diversion was one of the first requests received by the Nebo Soil Conservation District after farmers of the area voted its formation in October 1947. SCS engineers made the surveys and drew up designs and specifications.

Completed in the spring of 1950, the concrete structure was built under contract at a cost of only

NOTE.—The author is district conservationist, Soil Conservation Service, St. George, Utah.

\$15,700. The estimate had run \$18,300. One-third of the cost was paid by the Strawberry Water Users Association, which recognized the problem created by the silt from their sluice gates 2 miles upstream. PMA payments also helped to reduce the net cost to stockholders. The actual cost per acre served was just under \$3.50.

"An inspector was kept on the job at all times on the advice of SCS engineers, and he more than earned his keep by insuring us a good job," says Hansen.

The company recognizes that the completion of the diversion dam is only the beginning. The long-range conservation plan of the company provides for installation of many new head gates and turn-outs, realignment and regrading of main canals and laterals, and investigation of seepage losses, especially on side hills, with an eye towards reducing these losses. At the insistence of George Jex, watermaster, Parshall measuring flumes or similar measuring devices will be installed on all canals and laterals.

Jex estimates that each farmer now uses 2 acre-feet of water per acre annually. When the measuring devices are installed, each of the 186 stockholders will know exactly how much water he is using.

The company plans to coordinate its sluicing operations with those of the Strawberry Water Users group, thereby taking advantage of heavy stream flows to remove the silt, sand, and gravel in front of its own diversion.

Gravel and silt deposits in farmers' ditches are expected to be reduced to a minimum as sluicing operations become more efficient. Reduced maintenance expenses are expected to save the cost of the diversion in a few years.

A power lift to operate the radial sluicing gates will replace the hand-operated lift installed when the dam was constructed. The Strawberry Water Users group also is paying one-third of the cost of that lift plus the installation of power lines.

On the individual farm front, a high percentage of the farmers are leveling land, installing new ditches, head gates, and turn-out structures, as well as improving their irrigation methods, in cooperation with the local soil conservation district, with the aim of making more efficient use of the water delivered to them through the company's improved irrigation system.

The company, incorporated in 1878, delivers

water to approximately 4,600 acres of some of the most productive farm land in Utah County. Members of the board of directors are Joe Hansen, R. L. Jex, Reuben Gardner, Ray Williams, and Gil Bearnson.

A spring flood would have washed out the old diversion downstream, and filled the canal and lateral ditches with mud, silt, and gravel, thereby taking a year's production from the farmers. By mutual enterprise and cooperative agreement, the company has not only achieved insurance against the vagaries of excessive rainfall and unusual spring thaws, but also finds that it has developed long-range plans which will insure better irrigating streams to the farmer at lower cost.

DISTRICT PROFILE

DONALD PHARIS
of
MISSOURI

Donald Pharis retired about a year ago from the presidency of the Missouri State Association of Soil Conservation District Supervisors. As charter president Pharis saw the supervisors through a stormy 2 years. His retirement through a provision of the bylaws was really from his own choice, since it was he who insisted on a 2-year limit when the association was formed in 1947.

Pharis was committed to the principle that soil conservation districts actually should be run by farmer-elected representatives, not by professional workers. He preached the gospel that districts belong to the farmers and that unless they take time to run their own organizations they cannot be a success.

Don was born in Bates County, Mo. After graduation from the Missouri College of Agriculture in 1920 he taught vocational agriculture 14 years. His pupils speak of him as a dynamic personality, with the inspiring qualities of a great evangelist.

In 1927 Don and his wife chose a 160-acre farm near Liberty in Clay County to carry out their long ambition to become farmers. One of the first things he did was to start a soil conservation program. Some of the first terraces in the county were built in 1929 on his farm. It is all terraced now and has been farmed on the contour since 1934. Don pioneered the use of commercial fertilizer in his county and also the use of improved rotations with grass.



Don and Chief chat over coffee in the Pharis home.

Pharis was elected AAA committeeman in Clay County in 1936, and in 1941 helped with the fight for a districts enabling act for Missouri. In 1943 he helped push the act through the State legislature. With the district's program on a sound legal basis, Don was ready to talk about a district with his county farm bureau. When the district was voted in he was elected one of the supervisors and was chosen the first chairman.

Under Don's guidance, the first training meeting for supervisors was held in Springfield in September 1949. He hurried away to receive a national award for "distinguished service in conserving the Nation's resources," given by the Des Moines *Register and Tribune* and radio station WHO at their annual field day near Des Moines, Iowa. Other recipients were Kent Leavitt and Chief Hugh Bennett.

Early in the soil conservation movement Don saw the need for arousing public interest. He has helped inaugurate essay, poster, and speaking contests in the schools of Clay County. Churches in the county are urged to consider soil conservation a religious responsibility.

The Clay County Soil District supervisors in recent years have conducted an air tour over the district. Oldsters who never dreamed of riding in the clouds have looked down on the rolling fields and marveled at the conservation work which keeps the soil secure, where it can continue to contribute to the way of life that Donald Pharis always has preached and will continue to preach.

—W. H. LATHROP.

FOREIGN TECHNICIANS AT TRAINING CENTER.—

Soil conservation work brings together technicians of many backgrounds, to the mutual advantage of all. After 8 months of field experience in various parts of the United States, for example, D. G. Kelkar of India, U Aung Myint of Burma, and Julio Bran of El Salvador rounded out their training last fall by taking a 5-week course at the training center for professional soil conservationists, 13 miles north of Coshocton, Ohio.

The training center has been operated by the Upper Mississippi Region of the Soil Conservation Service for 7 years. Its purpose is to school new professional employees in the latest soil conservation methods and developments. Enrollment is drawn from Ohio, Iowa, Michigan, Wisconsin, Missouri, Minnesota, Illinois, and Indiana.

Heading the center is William H. Bender, soil scientist, who has been with the Soil Conservation Service more than 8 years. He is assisted by George Osterson, engineer, and other specialists who serve as instructors in their several fields.

Mornings are spent in classrooms, afternoons in the fields. Farms are planned, contour lines are run, soil tests are made, topographic maps prepared, each step discussed with farmers themselves. In the evenings there are round-table discussions where human relations in general and working relationships with farmers are emphasized. There is also a varied recreational program, which carries special appeal to technicians from abroad.

Saturdays frequently are devoted to field tours to nearby show places such as the Malabar Farm, the Blubaugh Farm,



At training center last fall: William H. Bender, Jr., in charge; Julio Bran, of El Salvador; D. G. Kelkar, of Baroda State, India; U Aung Myint, of Rangoon, Burma.

and the Muskingum Conservancy District.

The students and faculty are all housed, fed, entertained, and trained in one building, which is large enough to supply dormitory and other facilities for 25 students and a full complement of instructors.

Meals and housing are made available at a very small fee.

Sessions for new groups are held four times a year—spring, summer, fall, and winter.

Since its organization the center has included three or more foreign technicians in each of its sessions. To date 75 technicians, from 19 countries, have been trained here. Men have come from Greece, Palestine, Cyprus, China, India, Burma, Canada, Australia, Tanganyika, Trinidad, Colombia, Brazil, Ecuador, Peru, Chile, El Salvador, Bolivia, Costa Rica, and Mexico.

—ERNESTINE MARTINEZ.

FENCE-POST STORY.—When Bill Strayer, Franklin Township, York County (Pa.) Soil Conservation District farmer, noticed that posts in the fence separating his cropland and pasture were getting shorter and shorter above ground, he began to wonder. When he put a rule on the posts he was surprised to find the height above ground was only 2½ to 3 feet, compared with the original 5 feet. Since there had been no sawing-off, he set out to find the cause.

While walking over wheatfields and cornfields above the fence, he noticed rock exposed in several places. Then he observed that little topsoil was left. And, he recalled, he had been getting less and less production from these fields. He knew then that the missing topsoil had washed down the slope and lodged against the fence. Strayer asked the York County Soil Conservation District for help. Working with Melvin Blish, SCS technician, he developed a complete conservation plan that he is now establishing. A drainage ditch through the pasture will carry away excess surface water and some ground water. Diversion ditches and contour strips will offset the problem on the cropland slopes. With the guidance of Wayne Kile, SCS technician, he is building the diversions with his farm machinery, and has 2,000 feet completed. A contractor is handling the pasture-ditching job with heavier equipment.

"What I'm doing," Bill says, "is taking out an insurance policy to protect me against further loss of soil, seed, and fertilizer. This will give me more production. The pasture ditching will bring more and better forage for my cows."

DISTRICTS SWEEP HONORS.—Cooperators of the Greene County-Crowley Ridge Soil Conservation District of northeast Arkansas dominated as prize winners in Greene County's 1950 Balanced Farming Contest. All five prizes in each division of the contest, including landowners and tenants, went to district cooperators with the exception of one third-place which was won by a farmer in an annexed part of the district where operations are not yet fully under way.

Held annually, the contest is sponsored by the Arkansas Press Association and the Farmers Home Administration.

REVIEWS

PARTNERS WITH NATURE. By Ivah Green. 112 pp. Illustrated. 1950. Scranton, Pa.: The Haddon Craftsmen, Inc. \$1.25.

This new book is for boys and girls, but it is reviewed here for the benefit of parents and teachers who select children's books. It was written by a woman who knows boys and girls as well as she knows that conservation education is a major problem of this decade. Miss Green is State supervisor of some 5,000 one-room rural schools in Iowa. Through her work she has become thoroughly familiar with the difficulties educators are encountering as they attempt to teach conservation of natural resources to high-school and college students who have no background knowledge of such subjects. Along with many other top-line educators, she is convinced that if we want our children of today to be conservationists of the 1960's and on, we had better see that they begin training early when all their instincts are alert to the world of Nature about them. "Partners With Nature" was planned and written for the spe-



The author.

cific purpose of helping along this important educational endeavor.

The book is so skillfully done that even the most obdurate youthful rejector of textbooks would scarcely hold out against it. The hibernating toad, bumblebees winning the Boer War, the 50,000 earthworms living in an acre of ground, the farmer and the soil and the corn kernel working together to make sugar and starch, bacteria causing dead plants to decay—all these become story characters in the child's mind. Then, the main chapter, "Help Nature By Saving Soil and Water," comes as a reasonable and natural climax to the text. The author has succeeded admirably in making soil and water "alive" and the basis of all life. It is chiefly for this reason that "Partners With Nature" is suggested as a valuable book in the home or in school for children of the 1950's—because it doesn't thrust conservation techniques at them without first giving them understanding of Nature's plan and their place in it.

Beginning with fascinating accounts of small wild creatures adapting themselves to their environment in order to keep alive, it progresses smoothly through the plant-animal-people relationship and gently glides into the consequences of destroying the balance of Nature through misuse of land and water, not only to people but to all other living creatures. With great insight into the child's mind, the author weaves into the pattern the hydrologic cycle, soil organisms, formation of plant tissues, and other scientific truths usually omitted when writing for children.

And it is a beautiful book, profusely illustrated, largely with photographs loaned by the Soil Conservation Service. In the list of acknowledgements we find three SCS regional information and education men—Adrian Fox, Albert Foster, and C. W. Gee—who, in that order, reviewed the copy for technical accuracy before printing, helped with the illustrations, and provided the Conservation Creed incorporated on pages 95-97 near the close of the final chapter.

—PHOEBE O'N. FARIS.

OUR DAILY BREAD. By Susan Myrick. 212 pp. Illustrated. 1950. Danville, Ill.: The Interstate Printers and Publishers. \$2.04.

Here is perhaps the first third-grade reader on soil and water conservation ever published. The author's thorough understanding and appreciation of man's dependence upon soil and other natural resources coupled with her skill as a writer has resulted in a book that will undoubtedly be widely used in the public schools of the South. It is now on the free list for Georgia schools.

"Our Daily Bread" aims "to teach children that everything we eat and everything we wear comes from the soil, and to give them an understanding of protecting and replenishing the soil's fertility."

The attractive cover, the 66 full-page pictures, and the large, easily read print enhance the usefulness of this book for children. The author had the help of qualified educators and conservationists. Each picture "tells a story" without having a caption. The object of each chapter is clearly set forth together with suggestions for teachers who use the book.

Sallie, the main character, learns many of the lessons about soil and plants and animals and people from her



The author, and friend. Miss Myrick is associate editor of *The Macon Telegraph* and farm editor of *The Macon Telegraph and News*.

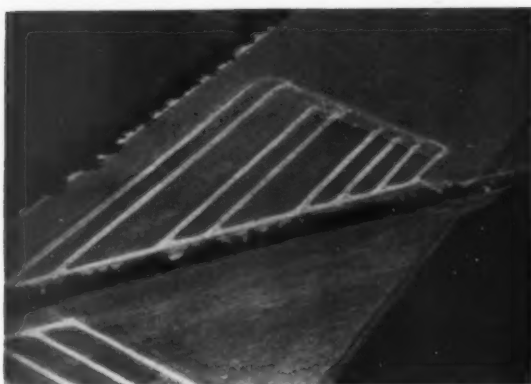
grandpa, whom she visits frequently at his farm. The text is developed so skillfully and naturally that one wonders if the author might not be writing of actual happenings of her own childhood days.

It would be almost impossible for a third-grade child to read this book without learning the same lessons that Sallie learned at the side of her grandpa on his Georgia farm.

—CAL L. ROARK.

A GOOD THOUGHT OFT REPEATED.—The Cox Chevrolet Co., of Morrilton, Ark., is helping the local soil conservation district's program by including a slogan on its letterheads: Help build Conway County by building better pastures.

NOTES FROM THE DISTRICTS



How a freshly dug tile system looks from the air. Many farmers are recording locations by photography. This "shot" is of part of the William Clelland Farm, near Hicksville, Ohio.

OHIO PIONEERS AIR-TOUR TECHNIQUE.—Soil conservation districts throughout Ohio are using the airplane to put conservation on the land. Thousands of farmers now use an airplane instead of a hay wagon or automobile as a means of transportation on tours of the land.

The airplane is gaining wide acceptance as a means of time conservation as well as soil conservation. Over one-half of the soil conservation districts in Ohio have held air tours this year and are booking dates and making plans for bigger and better air tours in 1951.

Ralph E. Young, former soil conservationist of Franklin County, is now agricultural aviation coordinator for the Ohio Aviation Board and president of the Ohio Flying Farmers. He is spearheading the program of using the airplane to put more conservation on the land.

The coordinator and R. E. Burwell, of the Ohio Aviation Board, arranged to fly T. C. Kennard, State conservation-



Young Kennard Eagon Burwell

ist, and Herbert Eagon, area vice president of the Upper Mississippi Valley Region, to Milwaukee last August. They spent several days making air-tour plans for districts in the entire eight-State area. At a meeting of district supervisors, Young and Burwell set up and conducted a demonstrational soil conservation air tour, during which a study was made of Wisconsin farms. The States represented in this demonstrational air tour were Indiana, Illinois, Minnesota, Michigan, Wisconsin, Iowa, Missouri, and Ohio. The supervisors went on record as endorsing air tours, and air-touring plans were made for each State.

"There are over 800,000 soil conservation district co-operators in the United States," notes Young. A half hour spent by each over his farm or soil conservation district, flying a carefully preplanned route, will do more to develop an awareness, understanding, and acceptance of soil conservation farming than 6 months spent on the ground studying things in profile.



This bull's-eye—an exact circle—is on the farm of Mrs. Russell Lippincott and Sons. The original pattern came so close to this perfect geometrical design that the late Russell Lippincott insisted on it. Its slight variation from exact contour comes within the allowable safe margin.

PARTNERSHIP PROJECT.—Fifteen hundred acres of new land in the Huntley irrigation project near Billings, Mont., may be brought under irrigation in a few years as a result of a cooperative investigation recently launched.

This investigation deals with a problem common to irrigation projects throughout western United States: How to bring into production, areas that at present are not even furnishing grass, due to high salinity and adverse soil conditions. These areas at present are rough and covered with a scrubby growth of sage and greasewood. Soils for the most part are heavy clays with very low organic content.

In this instance, solution of this challenging problem is being sought by the combined forces of the Yellowstone Soil Conservation District, the Bureau of Reclamation, the Soil Conservation Service, the Montana experiment station, and the Huntley Irrigation District.

In the past, a few farmers have attempted to develop some of the better of these lands, with limited success. Present-day techniques, methods, and equipment, however, open a new avenue of approach to a situation which heretofore has appeared hopeless.

The increased demand for more irrigated acres of hay and pasture to provide proper balance of livestock to cash crops has spurred interest in such a study.

Actual tests are being conducted on a 17-acre plot provided by the Bureau of Reclamation. The first step in the preparation of this plot was to level the land and otherwise prepare it for irrigation. Here the Soil Conservation Service furnished the technical help and the Yellowstone Soil Conservation District did the actual dirt moving. The irrigation district will supply the water, and the experiment station will handle field operations and records.

A committee consisting of representatives of all cooperating agencies is developing various treatments, rotations, and fertility tests. Reliable conclusions cannot be drawn for a period of 3 to 5 years.

If this project can determine the proper methods of handling and developing such lands, a great contribution to western irrigated agriculture will have been achieved.

PRISON FARM UNDER CONSERVATION.—Uncle Sam's Bureau of Prisons believes in practicing what Uncle Sam's Soil Conservation Service preaches. As a result of the cooperation of these organizations and the Fairfield County (Conn.) Soil Conservation District, there is improved utilization of the 400-acre reservation containing the Federal correction institution in Padanaram. In a year's time runoff water has been controlled, erosion has been reduced, condition of the soil has been improved, and production of farm crops has been boosted.

What all this means in reduced operating costs is found in a farm report showing that during the last 3 months the 114,429 pounds of food produced and used on the farm cost the Government 16 cents per man per day. This is in comparison with the purchase of 104,204 pounds of food at a cost of 26 cents per man per day, in the same period. Prior to the establishment of the conservation practices the institution rented 83 acres of land for farming. Now, no land is rented. Production this year has included vegetables for table use and canning, potatoes, milk, eggs, fruit, silage, and hay.

Establishment of conservation practices at the farm includes 32 acres of contour cropping and 47 acres of strip cropping in a rotation system (vegetables, hay, vegetables). On 51 acres, 6,700 feet of diversion terraces have been constructed. Four more acres have been improved with 1,400 feet of broad-base terraces. There are 500 feet of covered outlets. Forty acres have a winter cover crop. A pasture improvement program has been started. The complete conservation farm plan is being installed with the use of the institution's own labor and equipment.



ROTARY WEED MOWER.—Boyd Murrell and J. W. Stafford of Palestine, Tex., didn't realize they were starting something new in mowing machines when last summer they designed and built their first rotary weed mower.

It was simple: A discarded rear end of a car, a section of road-grader blade, and a trailer hitch. The blade was attached to the drive shaft and the car's rear wheels furnished power to rotate the blade.

Stafford put three of the mowers together in one frame and came up with a machine that would cut an 11-foot swath. The invention proved practical and economical. More and more farmers in the Anderson-Houston Soil Conservation District began making them. This summer there were more than 200 such weed cutters in the district.

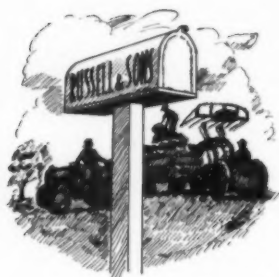
The machine which W. H. DuPuy made cost approximately \$110.

Stafford claims that he regularly mows up to 50 acres of pasture a day at a cost of only \$6 for upkeep through 2 years. That was for new blades. He claims his home-made mower gets the job done almost three times as fast as the conventional type. He likes it because it cuts weeds and sprouts without bothering grass. The machines are hitched in tandem behind the tractor or jeep when mowing pastures. But they can be towed one behind the other when being moved on the road. The blades can be inverted.

The rotary mower is gaining popularity. Neighboring districts are planning to try them. A Mississippi farmer saw one in operation and knew he'd found the answer to the problem of mowing his 800-acre pasture.

MORE FEED ON COUNTY FARM.—Expenses are lower in Windham County, Conn., as a result of soil and water conservation and good land-use undertakings. At the county farm, SCS technicians cooperating with the Windham County Soil Conservation District, have laid out and supervised installation of a system that has drained nearly 7 acres of wet land and opened the way for establishment of pasture improvement that in turn will cut down on the farm's feed bill.

Six hundred feet of main outlet ditch and 500 feet of intercepting ditches are now carrying away water that previously settled in low places and picking up water seeping from a neighboring hillside. The total cost of the job—ditching, fertilizing, and reseeding—was about \$75 per acre. This, Sheriff Lionel Poirer and Firman Hoeard, SCS farm planner, say, is low when compared with the increased productive value.



EVERY ACRE PULLS ITS WEIGHT.—Young Billy Paul and Edward Russell, who live on a small dairy farm near Pittsburg in east Texas, have no desire to leave the home place. Each owns a third of the 68-acre farm. Their father, Calvin C. Russell, owns the other third.

You wouldn't think that such a small place would make a comfortable living for the seven members of the Russell family, but the Russells will assure you that they are doing pretty well.

"But we couldn't make a living on this farm the way we used to farm," the elder Russell says. "We now use every acre as it should be used and we are getting the most from it."

He indicated a 3½-acre sericea lespedeza meadow as an example. The hillside it occupies provided nothing before they worked out their soil conservation program with the aid of Soil Conservation Service men assigned to the Sulphur-Cypress Soil Conservation District. They baled 328 bales of hay from it this year.

Russell encouraged his sons to start buying an interest in the farm. The partnership is working well.

—TED CALVERT.

GEESSE CUT THE GRASS.—There's an old saying about "birds of a feather." Well, this is a little story of "birds of a different feather"—one about geese helping the bobwhite quail.

Tender grass is a delicacy for a goose. For years, some farmers around Philadelphia, Miss., and elsewhere in the South have used geese to help keep cotton fields free of grass.

Bicolor lespedeza is an imported shrub that produces abundant seed that the bobwhite quail whistle about delightedly.

When Roy Goodin of Philadelphia started growing bicolor seedlings for the Mississippi State Game and Fish Commission, he found that grass was just as much a problem in the bicolor field as it was in the cotton field. So he turned his geese into the acre-and-a-half bicolor planting, as well as in 10 acres of cotton.

The result: About 225,000 bicolor plants that grew fast without grass competition. Goodin expected to receive about \$600 for the plants. The seedlings will be distributed to farmers by the Game and Fish Commission through Mississippi soil conservation districts. That means a lot of quail food in years to come.

As far as known, Goodin is the first person to use geese to control grass in bicolor seedlings. He is a cooperator with the Neshoba County Soil Conservation District, carrying

out a whole-farm conservation program worked out with help of D. McCluer of the Soil Conservation Service.

TOOK MILL TO FARMS.—How the soil conservation district program is an effective agent in developing cooperation between States and between individual farmers, increasing the farmer's annual cash income, and the development and use of new working tools is demonstrated in the wood-lot management operations.

The Southern Rhode Island Soil Conservation District had a portable sawmill and a permanent two-man crew for which it did not have full-time use. Over in neighboring Massachusetts, farmers in the Northeast Worcester Soil Conservation District had need for the services of a mill. The Rhode Island district was willing to loan both mill and crew. When 400 cooperators in the Massachusetts district were asked if they could use the outfit, 40 lined up work for it to do—enough to keep the mill and crew busy for 3 months.

An SCS forestry technician visited the 40 farms, inspected the wood lots, helped the farmers select and mark the trees for cutting, picked sites for the mill and for piling logs, and gave each farmer an estimate on cost of sawing.

In 3 months the mill and crew cut 118,299 board feet of lumber at a cost of \$2,564, about \$21 per 1,000 board feet. The largest job on any one farm was 15,000 board feet and the smallest was 979 board feet. Costs were cut when some neighbors brought their logs to a nearby mill site. Farmers paid for sawing costs in cash or by trading lumber to their district for the mill's services.

This operation effected a saving greater than in cost of sawing. For instance, trucking to and from a mill was eliminated. The farmer retained the sawdust and end slabs. Many of the logs were salvaged from land-clearing operations which, without the portable mill at hand, would have been piled and burned.

Portable mills help to get district cooperators to start wood-lot improvement programs. For example, the Rhode Island mill and crew are being brought back to the Massachusetts district for work in 1951. Response from notices to wood-lot owners indicates that the volume of business will be much larger than in 1950.



CHEAPER ON THE BIAS.—When Victor Evans bought the Blackie Gordon farm at Franklin he noticed that a lot of waste water had been running off the farm. In this area of low water supplies, waste is considered a crime.

With the aid of technicians from the Duncan Valley (Ariz.) Soil Conservation District, he conceived a plan to

keep the water at home for his own crops. He would change the direction of the irrigation runs diagonally across the field instead of straight down the slope. This reduced the grade to approximately 6 inches in 100 feet.

His first irrigation proved that it wasn't necessary to have any waste water. Every drop of water applied stayed on the field and soaked in.

He estimated the cost of irrigation by the old method at \$7 per acre. His actual cost per acre by the new method was \$3.60. In addition to this saving, his crop will be greatly increased. He explains it this way:

"Suppose I get 4 acre-feet of water each year, and 2 acre-feet run off as waste water. That means that I must raise a crop on 2 acre-feet. Now suppose I don't lose any water. The plants have 4 acre-feet for use in producing a crop. No one can argue that a better crop will not be raised with the extra 2 acre-feet of water saved."



The fire extinguished, firemen gather in their equipment and prepare to leave. Condition of shore line indicates amount of water removed.

POND STOPS FIRE.—In a strenuous 4-hour battle, firemen of Newark, Del., and Elkton, Md., successfully fought off flames that wiped out a 120- by 40-foot dairy barn and wrecked two silos. They were able to save a third newly filled silo, a large machinery shed, and other farm buildings and equipment having a total value of \$50,000 because they had a farm pond which was able to supply three continuous streams of water. The blaze started in the top of the barn, as a result of spontaneous combustion, at Ralph Vannoy's Blue Hen Farm, New London Road. It caused about \$150,000 damage by destruction of the barn, 2,500 bushels of grain, 300 tons of hay and straw, two silos, five calves, farm machinery, and dairy equipment. Eighty-five dairy cows were saved.

INFORMATION FOR CEMETERY.—Sam Wolfe answered his telephone while grabbing a bite to eat at noon. It was the local mortician calling at Gaffney, S. C., where Wolfe is work unit conservationist.

"How about getting you fellows to make a soils map of a small farm I'm buying near town?" was the gist of the

mortician's call. This didn't surprise Wolfe because the same fellow was already a cooperator of the Cherokee Soil Conservation District.

But what set him back on his heels was this added message: "You see, I'm going to convert that farm into a cemetery, and I want to know where rock might interfere with grave digging."

Wolfe left the phone shaking his head. "Is there no end to the uses people will make of land-capability maps?"

AMAZINGLY UNSURPRISING.—Out of 45 first-, second-, and third-place county winners in the annual Vermont Green Pastures Program, 37 are cooperators in soil conservation districts.

Melville Moulton, Caledonia Soil Conservation District supervisor, won first honors in the State. Fairdale Farms, managed by Robert Holden, Bennington County Soil Conservation District supervisor, placed second. Bernard Routhier, a conservation aid in the Soil Conservation Service, won honorable mention; he is a cooperator in the Essex County Soil Conservation District. Other district supervisors who were county winners are Willard Arms, first, Chittenden County; Harry Cooley, first, Orange County; George Ramsey, third, Essex County Soil Conservation District; and Leroy Kellas, third, Grand Isle County Soil Conservation District.

COUNTY PONDS.—Allegany County, N. Y., has just completed the construction of the seventeenth farm pond for the protection of Allegany County forest. The work has been done with heavy equipment of the Allegany County Soil Conservation District in which the county is a cooperator. SCS technicians planned and supervised the work.

Sites for most of the ponds were obtained by taking over tax-delinquent land. The ponds vary in size from one tenth to one surface acre, and range from 6 to 8 feet deep. Average cost was about \$310.

The ponds are for fire protection, flood control, storage of runoff in heavy storms, water for wild game, and recreation. All are stocked with fish. They are open to the public for fishing and other recreation but not for swimming.

THIS FARM CAME TO LIFE.—Walter Hadala's farm near Adams, Mass., is becoming an annual history maker. In August 1949 it made history when Massachusetts' first soil conservation face lifting attracted up to 10,000 visitors. In October 1950 Hadala, for the first time, filled his silo from production on the farm. What's more, in his haying operations he was able to save 10 days' work even though he handled twice as much hay as in former years.

Prior to the face lifting, 48 tons of hay was Hadala's maximum yield. This past year he cut 90 tons of top-quality hay. He also put away 90 tons of grass silage, 200 bushels of rye grain, and 750 bales of rye straw. When all his new meadows are established, Hadala expects to cut 150 tons of hay annually. That means he will have feed for more cows and have more milk to market.

BACK COVER

Farming in the Matanuska Valley, near Palmer, Alaska. Pioneer Peak in background. See J. H. Christ's article in this issue, "Farming in the Land of the Midnight Sun."

FEB 3 1951



Public Library
Detroit, Mich.
General Informa